

Amendments to the Claims

Claims 1-3 (Canceled)

Claim 4 (**Currently Amended**) A The direction sensor according to claim 1, comprising:

a substrate;

a first detecting circuit formed on the substrate and including at least two detecting elements;

a second detecting circuit formed on the substrate and including at least two detecting elements;

a first magnetic bias application part disposed facing toward the first detecting circuit, the first magnetic bias application part operable to apply a magnetic bias to the first detecting circuit by producing a magnetic field; and

a second magnetic bias application part disposed facing toward the second detecting circuit, the second magnetic bias application part operable to apply a magnetic bias to the second detecting circuit by producing a magnetic field having a direction that is different from a direction of the magnetic field produced by the first magnetic bias application part,

wherein the first detecting circuit includes:

a first detecting element having a longitudinal pattern direction;

a second detecting element having of which a longitudinal pattern direction that is different from the longitudinal pattern direction that of the first detecting element, the second detecting element being and which is electrically connected to the first detecting element in series;

a third detecting element having of which a longitudinal pattern direction that is in parallel with the longitudinal pattern direction that of the second detecting element; and

a fourth detecting element having of which a longitudinal pattern direction that is in parallel with the longitudinal pattern direction that of the first detecting element, the fourth detecting element being circuit, and which is electrically connected to the third detecting element in series,

~~—wherein in which~~ the first detecting element and the second detecting element in series are electrically connected in parallel ~~to, and~~ the third detecting element and the fourth detecting element ~~are also electrically connected in parallel, series.~~

wherein the second detecting circuit includes:

a fifth detecting element having a longitudinal pattern direction;

a sixth detecting element having of which a longitudinal pattern direction that is different from the longitudinal pattern direction ~~that~~ of the fifth detecting element, the sixth detecting element being and which is electrically connected to the fifth detecting element in series;

a seventh detecting element having of which a longitudinal pattern direction that is in parallel with the longitudinal pattern direction ~~that~~ of the sixth detecting element; and

an eighth-eights detecting element having of which a longitudinal pattern direction that is in parallel with the longitudinal pattern direction ~~that~~ of the fifth detecting element, the eighth detecting element being and which is electrically connected to the seventh detecting element ~~circuit~~ in series, and

~~—wherein in which~~ the fifth detecting element and the sixth detecting element are electrically connected in parallel, and the seventh detecting element and the eighth-eights detecting element ~~are also electrically connected in parallel.~~

Claim 5 (**Currently Amended**) The direction sensor according to claim 4,

wherein a direction of the ~~a~~ magnetic field produced by the first magnetic bias application part and a direction of the ~~a~~ magnetic field produced by the second magnetic bias application part ~~are crossing at 90° apart,~~

wherein the longitudinal pattern direction of the first detecting element and the longitudinal pattern direction of the second detecting element ~~are crossing at 90° apart, and~~

wherein the longitudinal pattern direction of the fifth detecting element and the longitudinal pattern direction of the seventh detecting element ~~are crossing at 90° apart.~~

Claim 6 (**Currently Amended**) The direction sensor according to claim 5,

wherein the direction of the magnetic field produced by the first magnetic bias application part and the longitudinal pattern direction of the first detecting element are ~~crossing~~ at 45° apart, and

wherein the direction of the magnetic field produced by the second magnetic bias application part and the longitudinal pattern direction of the fifth detecting element are ~~crossing~~ at 45° apart.

Clam 7 (**Currently Amended**) A ~~The~~ direction sensor according to claim 1, comprising:

a substrate;

a first detecting circuit formed on the substrate and including at least two detecting elements;

a second detecting circuit formed on the substrate and including at least two detecting elements;

a first magnetic bias application part disposed facing toward the first detecting circuit, the first magnetic bias application part operable to apply a magnetic bias to the first detecting circuit by producing a magnetic field; and

a second magnetic bias application part disposed facing toward the second detecting circuit, the second magnetic bias application part operable to apply a magnetic bias to the second detecting circuit by producing a magnetic field having a direction that is different from a direction of the magnetic field produced by the first magnetic bias application part.

wherein the first detecting circuit includes:

a first detecting element having a longitudinal pattern direction; and

a second detecting element having of which a longitudinal pattern direction that is different from the longitudinal pattern direction that of the first detecting element, the second detecting element being and which is electrically connected to the first detecting element in series,

wherein the second detecting circuit includes:

a third detecting element having a longitudinal pattern direction; and

a fourth detecting element having of which a longitudinal pattern direction that is different from the longitudinal pattern direction that of the third detecting element, the fourth

detecting element being and which is electrically connected to the third detecting element in series.

Claims 8-11 (**Canceled**)

Claim 12 (**Currently Amended**) A The direction sensor according to claim 1, comprising:

a substrate;

a first detecting circuit formed on the substrate and including at least two detecting elements;

a second detecting circuit formed on the substrate and including at least two detecting elements;

a first magnetic bias application part disposed facing toward the first detecting circuit, the first magnetic bias application part operable to apply a magnetic bias to the first detecting circuit by producing a magnetic field; and

a second magnetic bias application part disposed facing toward the second detecting circuit, the second magnetic bias application part operable to apply a magnetic bias to the second detecting circuit by producing a magnetic field having a direction that is different from a direction of the magnetic field produced by the first magnetic bias application part.

wherein the first detecting circuit is formed on a first surface of the substrate and opposite to a surface on which the second detecting circuit is formed on a second surface of the substrate opposite to the first surface.

Claims 13-17 (**Canceled**)